A NON-CHOLERA VIBRIO RESEMBLING THE TRUE CHOLERA VIBRIO AND A PIGMENT-FORMING VIBRIO.*

JENNIE G. DRENNAN.

(From the Quarantine Station, Staten Island, New York.)

A NON-CHOLERA VIBRIO.

Since Koch in 1883 isolated the true cholera vibrio other vibrios have at different times been isolated. Some of these have borne a marked resemblance in many respects to the Koch vibrio, but have failed to answer to all the requirements, failing always in the agglutination and bacteriolytic tests and some in being hemolytic and possessing more than one flagellum. In some of these cases in observing the marked similarity the question has arisen whether these vibrios may not be the cholera vibrio under different conditions of growth, which have caused it to lose its pathogenicity and its power to react to the tests; but it is generally conceded that such is not the case and that these vibrios are not related to the true cholera vibrio.

This vibrio, Case 7050 of the series of steerage passengers examined for cholera vibrios during the summer and the autumn of 1911, is reported on account of its similarity to the true cholera vibrio. It was isolated from the rectal contents of an Italian, 22 years old, who arrived November 15, 1911. After this vibrio, which so closely resembled the true cholera vibrio, was found in his rectal contents he was removed to Swinburne Island Hospital for further observation. The preliminary examination showed this small vibrio to be present in large numbers. It did not agglutinate with the cholera serum in any dilution whatever. On November 21 it was still present in the stools, but on November 27 and December 10 and 11 it had completely disappeared.

This vibrio gave a moist, white growth on alkalin agar, the colony being larger, moister, and slimier than that of cholera. It had the typical morphology and motility of the true cholera vibrio. An alkalin peptone culture gave a surface growth and a faint indol

* Received for publication October 16, 1913.

TABLE 1.
A NON-CHOLERA VIBRIO.

Name	Source	Morphology	Gram	Motility	Colony	Gelatin	Indol	Peptone	Flagellum	Pathogenicity	Agglutination with Cholera Serum
True cholera vibrio.....	Human feces	Small curved rod	Negative	Very rapid	White, opalescent, becoming granular	Rapidly liquefied	Cholera red	Pellicle aerobe	One	For man	Positive
Spirillum of Metchnikovi.	Feces and blood of domestic fowl	Small curved rod	Negative	Very rapid	Larger	More rapid	Cholera red	Pellicle aerobe	One	Fowls and guinea-pigs	Negative
Spirillum of Massowah ..	Human feces	Small curved rod	Negative	Very rapid	.....	More rapid	.....	Pellicle aerobe	Four	Birds	Negative
Spirillum of Finkler and Prior.....	Human feces	Thicker in the center and more pointed at the ends	Negative	Very rapid	.....	More rapid	Negative	Pellicle aerobe	One	.....	Negative
Spirillum of Deneke.....	Cheese and butter	Much like that of Finkler and Prior	Negative	Very rapid	.....	More rapid	Negative	Pellicle aerobe	One	.....	Negative
No. 7050.....	Human feces	Like cholera vibrio	Negative	Very rapid	Larger, moister, and slimier	More rapid	A faint red	Pellicle aerobe	One	.....	Negative

reaction; gelatin was rapidly liquefied; and acid was produced in dextrose and saccharose peptone but not in lactose. It was strongly hemolytic on blood agar. It possessed but one flagellum, in this respect resembling the true cholera vibrio and that of Metchnikovi, Finkler and Prior, and Deneke. Inoculated twice intraperitoneally into guinea-pigs it produced no pathogenic results.

Table 1 will show the points of similarity and dissimilarity between the true cholera vibrio and a few of the other vibrios, which in many respects bear a striking resemblance to it. The points of similarity between the Koch vibrio and No. 7050 are (1) the source, human feces; (2) the morphology, a small curved rod; (3) staining, gram-negative; (4) motility, very rapid and darting; (5) gelatin, rapidly liquefied; (6) peptone,

aerobic growth; and (7) flagellum, one. The points of dissimilarity are (1) the colony, which in the case of No. 7050 is larger, moister, and slimier than that of the true cholera vibrio; (2) the faint cholera red it gives in contrast to the marked red in the case of the latter; and (3) its pathogenicity and the negative reaction with the cholera agglutinating serum. No. 7050 differs from the spirillum of Metchnikovi (1) in having been found in the human feces while the latter was isolated from the feces and the blood of the domestic fowl and also (2) in the pathogenicity of the latter for fowls and guinea-pigs. It differs from the spirillum of Massowah in having only one flagellum while the latter has four. Its morphology differs from that of the vibrio of Finkler and Prior in that the latter is thicker in the middle and more pointed at the ends. It also differs in this respect from the spirillum of Deneke, which is, however, found in cheese and butter and not in the human feces. It bears closer resemblance to the vibrio of true cholera than to any of the others here mentioned, which have a human source, i.e., the spirillum of Massowah and

TABLE 2.

A PIGMENT-FORMING VIBRIO.

Name	Source	Morphology	Motility	Stain	Colony	Gelatin	Peptone	Indol	Hemolysis	Pathogenicity	Agglutination with Cholera Serum
True cholera vibrio.....	Human feces	Small curved rod	Very rapid and darting	Gram-negative	White and opalescent, becoming coarsely granular	Rapidly liquefied	White surface growth, aerobic	Positive	Negative	Man	Positive
Pigment-forming vibrio...	Human feces	Large curved rod	Slow	Gram-negative	Large, moist, and white, becoming a rich, dark brown	Slowly liquefied	White surface growth, becoming brown and extending to the depths Aerobe and facultative anaerobe	Negative	Slow	.....	Negative

Finkler and Prior, and yet it closely resembles the spirillum of Metchnikovi except that the latter has not a human source.

A PIGMENT-FORMING VIBRIO.

This vibrio is being reported because chromogenic vibrios are rare, if indeed one has as yet been reported. The rectal contents from which it was isolated were obtained by rectal swab from a young male, 18 years old, who arrived January 21, 1912, and who showed some signs of intestinal disturbance.

It is a large, motile vibrio producing a large, white, moist colony on alkalin agar and turning slowly to a dark, rich, brown color from the formation of a pigment. The same grown in alkalin peptone culture medium shows a growth at the surface, which slowly changes to the same dark brown and gradually extends to the depths of the tube. It is an aerobe and a facultative anaerobe, liquefying gelatin slowly. It produces acid in dextrose and saccharose peptone but not in lactose. It is slowly hemolytic and on alkalin blood agar produces a geranium odor similar to that of the growth of *B. pyocyaneus*. It is monotrichous and in this respect resembles the true cholera vibrio. It produces no indol. The only points of resemblance between the true cholera vibrio and this pigment-forming one are (1) the same source, human feces; (2) stain, gram-negative; (3) both are aerobes but the latter is also a facultative anaerobe.